

**REMARKS**

Claims 1-9, 11, 13-15, 17-20 and 22 are pending in this application. By this Amendment, claims 1, 3, 6-9, 11, 20 and 22 are amended.

Applicant gratefully acknowledges the Office Action's indication that claims 15 and 17-19 are allowed.

The Office Action rejects claims 1-9, 11-14, 20 and 22 under 35 U.S.C. §103(a) over U.S. Patent 5,119,399 to Santos et al. (hereafter Santos). The rejection is respectfully traversed.

Independent claim 1 recites a first phase shifter to shift a phase of an input signal within a shifting range of  $0^{\circ} \sim 360^{\circ}$ . Independent claim 1 further recites a hybrid coupler to separate an output of the first phase shifter into first and second channel signals. Independent claim 1 further recites a second amplitude invariant phase shifter, a third amplitude invariant phase shifter and a combiner.

In contrast, Santos discloses a local oscillator 13, a signal splitter module 15, a phase shifter 17, a phase shifter 21 and a sum module 25. See Santos' Figure 1. The Office Action appears to assert that Santos' signal splitter module 15 and sum module 25 corresponds to a coupler and a combiner. However, Santos does not teach or suggest the claimed first phase shifter. Santos' splitter module 15 may produce two kinds of signals that have a phase of  $0^{\circ}$  and  $90^{\circ}$ , respectively. Santos' splitter module 15 does not produce signals within the limit of  $0^{\circ} \sim 90^{\circ}$ . Furthermore, Santos does not teach or suggest a phase shifter controlling a phase of an

input signal that is output from the local oscillator 13. Santos merely compensates the output signal of the phase shifter 17 and the phase shifter 21 with the output signals of the ADD1 and ADD2 so that it minimizes measurement or operational errors of a precision instrument (such as a vector signal analyzer). Accordingly, Santos does not teach or suggest a first phase shifter to shift a phase of an input signal within a shifting range of  $0^{\circ}\sim 360^{\circ}$ . Accordingly, independent claim 1 defines patentable subject matter.

Independent claim 13 defines patentable subject matter for at least similar reasons. That is, independent claim 13 recites a first amplitude invariant phase shifter for shifting a phase of a received signal at prescribed intervals within a phase shifting range of approximately  $0^{\circ}\sim 360^{\circ}$ . Independent claim 13 further recites a quadrature hybrid coupler, a second amplitude invariant phase shifter, a third amplitude invariant phase shifter and a combiner. For at least similar reasons as discussed above, Santos does not teach or suggest at least these features. Accordingly, each of independent claims 1 and 13 define patentable subject matter. Claims 2-9, 11 and 20 depend from claim 1 and claims 14 and 22 depend from claim 13 and therefore define patentable subject matter at least for this reason. In addition, the dependent claims also recite features that further and independently distinguish over the applied references.

### **CONCLUSION**

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Favorable consideration and prompt allowance of claims 1-9, 11, 13-15, 17-20 and 22 are earnestly solicited. If the Examiner believes that any additional changes would place

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the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney, David C. Oren, at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,  
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